

REMARKS

Applicants note that this is the first response containing a claim listing. Applicants note that the originally filed claims contained an error in numbering. Specifically, "19" was originally skipped. For the purpose of the claim listing contained herein, correct numbering has been used (ie, original claims 20-27 appear above with the numbers 19-26).

In the Office Action, claims 1-26 are rejected under 35 U.S.C. 103(a) as being obvious over Ueda (JP 1992-363301) and Blixt et al (U.S. Patent No. 4,964,915), taken in view of Savina (U.S. Patent No. 3,223,544) and Persson et al (WO 9955964).

The problem solved by Ueda is the bad emulsion stability of the sizing dispersion, which is improved by using a cationic starch with a hydrophobic group. It also discloses the use of surfactants such as sodium lignin sulfonate or polyoxyethylene lauric acid amide, if necessary, in the sizing agent. Ueda is silent about the use of condensed sulfonates.

It is asserted in the Office Action that it would have been obvious to utilize the condensed sulfonates claimed in the present invention in the invention of Ueda, since such condensed sulfonates are conventional alternatives to lignosulfonate dispersants. Savina and Blixt have been cited to demonstrate such conventional knowledge.

Savina relates to the reduction of big aggregates of ketene dimer in sizing dispersions with cationic starch. According to Savina this may be accomplished by adding a water-soluble cationic starch and an anionic agent, where the anionic agent can be sodium lignosulfonate, the formaldehyde condensation product of sodium naphthalenesulfonate or a mixture of both these compounds. Savina teaches that the invention is *specific to the agents named* (eg sodium lignosulfonate and the condensation product of sodium naphthalenesulfonate). Other anionic agents were tried

and were not found to have the desired effect on aggregation. See Savina, col. 1, lines 55-59.

As a first point, the mere fact that both lignosulfonate and the formaldehyde condensation product of sodium naphthalenesulfonate may be used with starch to prevent aggregation in a sizing dispersion does not teach, disclose or suggest to one skilled in the art that the two compounds would also be replaceable with each other if one or the other were utilized to improve the sizing effect of a sizing dispersion. In fact, Savina is completely silent with regard to any effect the two specific anionic agents it describes would have on the sizing performance of the sizing dispersant, as opposed to the prevention of aggregation of ketene dimer in the sizing dispersant. Thus, there would be no motivation for one skilled in the art to use either of the two disclosed anionic agents to improve sizing performance.

Further, since Savina has noted that only these two specific compounds were found to have the effect Savina desired on aggregation in the sizing dispersions, it is unclear how Savina would teach, suggest or disclose to one skilled in the art the broad generalization that all condensed sulfonates are conventional alternatives to lignosulfonate dispersants or how Savina would motivate one to make such a replacement to improve sizing.

Blixt has also been cited as supporting the assertion that it is known that the claimed condensed sulfonates are conventional alternatives to lignosulfonate dispersants. However, it is noted that Blixt, in fact, states that suitable anionic agents for use in the invention of Blixt *are described in Savina* and incorporates the teachings of Savina by reference, supposedly as disclosing the use of “many common and advantageous dispersing agents” despite Savina’s actual disclosure of only two anionic agents (see Blixt, col. 6, lines 6-14), and then lists lignosulfonates, polynaphthalene sulfonates and styrene sulfonate-containing polymers as preferred anionic dispersing agents. It is noted that Blixt also discloses that with certain sizing agents, such as impure alkyl ketene dimers, no anionic dispersing agent at all may be required (see

Blixt, col. 6, lines 18-20). Thus, it is also unclear how Blixt teaches, suggests or discloses to one skilled in the art the broad generalization that all condensed sulfonates are conventional alternatives to lignosulfonate dispersants or how Blixt would motivate one to make such a replacement to improve sizing.

As noted in the Office Action, Persson relates to improved retention and drainage of high conductivity stocks through the addition of a cationic starch having a hydrophobic group. It has been asserted that Persson also discloses the sulfonate condensation product claimed in the present invention. Specifically, page 4 and 10 of Persson are cited in the Office Action. Applicants have found no reference to condensed sulfonate in Persson and respectfully request the Examiner to more particularly point out where in the text of Persson such condensed sulfonates are believed to be disclosed. It is noted that Persson discusses sulfonated vinyl addition monomers and anionic condensation polymers, e.g. melamine-sulfonic acid sols, but these compounds are not condensed sulfonates as claimed by the present invention.

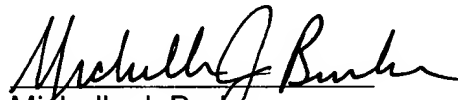
Further, the mere fact that the invention of Persson could improve retention and dry strength by using the cationic starch claimed by the present invention when used in high conductivity stocks, would not teach, suggest or disclose to one skilled in the art that the sizing effect in such high conductivity stocks would also be improved.

In accordance with the reasoning set forth in the Office Action, one skilled in the art, when attempting to improve sizing performance, would be motivated by the cited references to replace one of several surfactants mentioned as potential additives (that could be added "if necessary") to the neutral sizing agent of Ueda, with the condensed sulfonates disclosed by the present invention because (1) Savina discloses that sodium lignosulfonate and the formaldehyde condensation product of sodium naphthalenesulfonate are the only two compounds found to reduce agglomeration when a cationic starch is used in accordance with the invention of Savina; and (2) because Blixt teaches that it is possible to add anionic dispersing agents, such as the two anionic

dispersing agents disclosed in Savina to the emulsions of Blixt, even though Blixt also notes that it may not be necessary to do so depending on the sizing agent used. However, as discussed above, there is no teaching, suggestion, or disclosure within any of the references that would motivate one skilled in the art to make the combination described.

Therefore, the present invention is considered both novel and non-obvious with regard to the cited references. The Applicants respectfully request reconsideration of the rejection of claims 1-26 and a finding that the claims are in condition for immediate allowance.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michelle J. Burke", written over a horizontal line.

Michelle J. Burke
Reg. No. 37,791
Attorney for Applicant

Akzo Nobel Inc.
Intellectual Property Dept.
7 Livingstone Avenue
Dobbs Ferry, NY 10522-3408
(914) 674-5459